

## ABSTRACT

An electrical system includes a solid state relay  
5 (1) and an electrical connector (2) that connects solid  
state relay (1) to a load (4). The solid state relay  
(1) includes a power MOSFET (Q1) for switching power to  
the load (4). A PNP transistor (Q2) monitors the  
voltage drop across the power MOSFET (Q1), and shuts the  
10 power MOSFET off when the voltage drop exceeds a  
reference level. The solid state relay circuitry floats  
when the power MOSFET is commanded OFF so there is no  
leakage to ground. The relay (1) can be used with an  
electrical connector that includes a short pin (34) or  
15 shunt (16) that is disconnected before male and female  
terminals (12, 22) are unmated. Disconnection of the  
shunt (16) or the short pin (34) causes the power MOSFET  
to be commanded OFF so that there is no current flowing  
through the male and female terminals (12, 22) when they  
20 reach an arc susceptible position. The solid state  
relay (1) and the connector (2) are suitable for use in  
a 42 Volt automotive electrical system.

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